BULL. BOT. SURV. INDIA
Vol. 3, Nos. 3 & 4: pp. 393-394, 1961

NOTES ON INDIAN COMMELINACEAE—III: CYTOLOGICAL OBSERVATIONS

R. V. KAMMATHY
Junior Research Fellow, Botanical Survey of India, Poona
AND
SESHAGIRI RAO ROLLA
Regional Botanist, Botanical Survey of India, Poona

ABSTRACT

Chromosome numbers of 18 species under 4 genera are studied of which the chromosome numbers of 6 species are recorded for the first time. Four species show variation from earlier reports. Aneuploidy and polyploidy are noted in *Cyanotis* and *Murdannia*. Reinvestigation of chromosome numbers of some of the species by earlier workers has been suggested to confirm their earlier reports. Possibility of a separate generic status has been suggested for the Ochreaeflora section of *Cyanotis*. A few new combinations are also added.

During the study on the Cyto-taxonomic Revision of Indian Commelinaceae, the chromosome numbers of a few species of *Murdannia* Royle, *Aneilema* Br., *Cyanotis* Don. and *Floscopa* Lour. from different populations have been worked out following the usual aceto-carmine squash technique. The results of the various species studied are presented in Table I.

In the genus *Murdannia* quite a good number of species show haploid numbers in the multiple of 10 but in a good percentage of other species there is considerable variation in number ranging from 7 to 12 as noted for some of the species by Rolla *et al*[1] and Raghavan and Rolla[2]. The present note with further evidence elaborates and confirms such variation and supports the view expressed by Raghavan and Rolla[2] regarding the existence of polyploid and aneuploid types in the various geographical races of same species.

The habit of *Murdannia loriforme* (Hassk.) Rolla ct Kammathy *comb. nov.* (=*Aneilema loriforme* Hassk. in Pl. Jungh. 143, 1852; *Aneilema terminalis* Wt. in Icones Plant. Orient., 6, tab. 2076, 31, 1853; *Aneilema nudiflorum* R. Br. var. *terminalis* (Wt.) Cl. in DC. Mon. Phan. 3, 211, 1881) and a few other characters are quite distinct from *M. nudiflora* (Linn.) Brenan as observed from the plants under living condition. More details on this species will be published elsewhere. Further, the distinct chromosome numbers together with the abrupt size variation of the bivalents of *M. loriforme* gives additional support to its specific status. This species has been erroneously confused by Panigrahi and Kammathy[4] with *M. terminalis* (Bl.) Raizada which is itself a wrong combination as *Tradescantia terminalis* Bl. of Java is never a species of *Murdannia*. *M. loriforme* (Hassk.) Rolla et Kammathy is a distinct species by itself. This species is commonly misidentified as *M. simplex* [=*M. sinica* (Ker-Gawl) Brückn.] and Shetty and Subramanyam's[5] report of $2n=40$ with such remarkable differences in the size of chromosomes under *M. sinica* needs verification. Malik's[6] report of $n=30$ for *M. nudiflora* seems to be highly improbable in view of the constant report of $n=10$ for several populations of this species. His *M. nudiflora* seems to be a misidentification for *M. simplex.*

The present observation on *Aneilema montanum* from Kerala area confirms the report of Shetty and Subramanyam[5].

With the evidence gathered for the various species of *Cyanotis* it is quite possible that the basic number of the genus is $x=12$ except the Ochreaeflora section of Clarke[8] and the bulbous form of *C. arachnoidea*. In *Cyanotis tuberosa* where distinct intraspecific polyploidy is recorded, close correlation between the size of the plant and the chromosome number has also been observed. The gigantic hexaploid from Mahabaleswar, the medium sized tetraploids from Katraj and Gajanoor

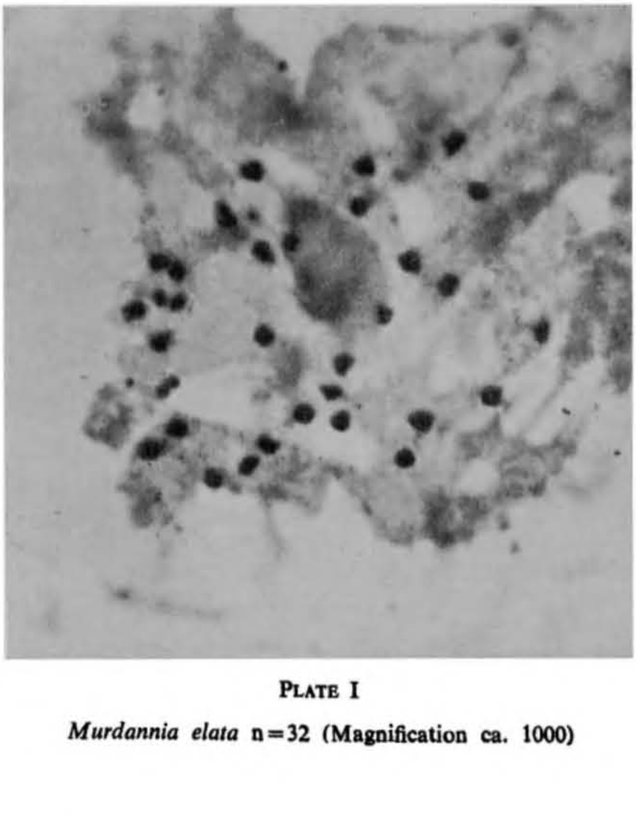

PLATE I

Murdannia elata $n=32$ (Magnification ca. 1000)

TABLE I

Results of the various species of Commelinaceae investigated

Sl. No.	Name of species	Locality and Field Numbers	Present observations	Remarks and Previous observations
1	*Aneilema montanum* Wt.	Tenmalai (Kerala), 70958	n=14	2n=28[5]
2	*Cyanotis arachnoidea* Cl.	Devarayadurga (Mysore), 73296; Beduguli (Mysore), 73776; Tenmalai (Kerala), 71547	n=12	2n=24[5]
†	-do-	Devarayadurga (Mysore), 73320	n=11	Bulbiferous
3	*C. axillaris* (L.) Schult. f.	Near Kanheri caves (Bombay), 32775; Narsapur (Near Hyderabad), 73982; Tenmalai (Kerala), 70918	n=10	2n=20[2,5,7]
4	*C. cristata* (L.) Don.	Hastinapur (near Meerut), 786; Hyderabad, 73967; Shertallai (Kerala), 73919	n=12	2n=24[2,5,7]
5	*C. cucullata* Kunth	Khed (near Poona), 71887; Hyderabad, 73979; Near Chittaldurg (Mysore), 73168	n=10	n=10[2]
6*	*C. pilosa* Schult. f.	Ooty, 73904; Anamalais, 73952	n=12	
7	*C. tuberosa* (Roxb.) Schult. f.	Poona, 39491	n=12	n=12[2], 24[2], 36[2]
		Katraj ghat (near Poona), 71252; Gajanoor (Mysore), 74263	n=24	
		Mahabaleshwar, 67711	n=36!	! Second verification[2]
8*	*Floscopa scandens* Lour.	Garsoppa (Mysore), 78713	n=12	
9*	*Murdannia dimorpha* (Dalz.) Brückn.	Hyderabad, 73964	n=10	
10†	*M. elata* (Vahl) Brückn.	Gajanoor (Mysore), 74338	n=32	2n=40[9]
11*	*M. esculenta* (Wall. ex Cl.) Rolla et Kammathy *nov. comb.*	Beduguli (Mysore), 73775	n=10	
12†	*M. gigantea* (Vahl) Brückn.	Tenmalai (Kerala), 71210	n=22	n=11[1,4]
13	*M. nudiflora* (L.) Brenan	Narsapur (Near Hyderabad), 73980; Shertallai (Kerala), 73922	n=10	2n=20[4,7,11]
14*	*M. scapiflora* (Roxb.) Royle	Agumbe (Mysore), 74135	n=9	
15†	*M. semiteres* (Dalz.) Santapau	Hyderabad, 73971	n=12	n=7[2], 10[2], 20[2]
16	*M. simplex* (Vahl) Brenan	Lingamala (Near Mahabaleswar), 32828	n=30	n=30[2,6] (6 under M. nudiflora?), 40[4]
17	*M. spirata* (L.) Brückn.	Shertallai (Kerala), 73918	n=20	n=9[2], 2n=20[9], 40[4,10]
18*	*M. loriforme* (Hassk.) Rolla et Kammathy *comb. nov.*	Thenmalai (Kerala), 70501	n=20	2n=40[5] (Under M. sinicum?)

*Chromosome numbers recorded for the first time.
†Haploid numbers differing from previous observations.

and the commonly available small diploid from Poona present interesting characters in relation to size. The aneuploid record of n=11 in the present report under *C. arachnoidea* with a small underground bulb, a character quite distinct from the species proper, needs special mention and further investigation.

The observations made with several populations of *Cyanotis axillaris* and *C. cucullata* regarding their interrelationships with other species constantly reveal n=10, and this further supports the taxonomic evidence so far gathered and thus confirm the possibility of separating not only *C. axillaris* as suggested by Sharma[7], but also *C. cucullata* of the section Ochreaeflora of Clarke[8] into a distinct genus.

In *Floscopa scandens*, the only species of the genus growing widely in India and the far east, n=12 is recorded here. The chromosome numbers of the African and American species of this genus are not yet known.

Incidentally a few new combinations under *Murdannia* have been validated as follows after careful scrutiny of the specimens:

(1) *Murdannia esculenta* (Wall. ex Cl.) Rolla et Kammathy comb. nov.
(=*Aneilema esculentum* Wall. ex Cl. in DC. Mon. Phan. 3, 206, 1881).

(2) *Murdannia zeylanica* (Cl.) Brückn. var. *longicapsa* (Cl.) Rolla et Kammathy comb. nov.
(=*Aneilema zeylanicum* Cl. var. *longicapsa* Cl. in DC. Mon. Phan., 3, 204, 1881).

A detailed paper on this subject will be published elsewhere.

The authors' thanks are due to Council of Scientific and Industrial Research for financial assistance and Dr. H. Santapau and other friends for constant cooperation.

LITERATURE CITED

1. ROLLA, S. R., G. PANIGRAHI AND R. V. KAMMATHY—*Proc. Ind. Sci. Cong.*, Part 3: 366, 1960.
2. RAGHAVAN, R. S. AND S. R. ROLLA—*Curr. Sci.*, 30: 310, 1961.
3. WIGHT, R.—*Icones Plant. Ind. Orient.*, 6: tab. 2076, 31, 1853.
4. PANIGRAHI, G. AND R. V. KAMMATHY—*Proc. Ind. Sci. Cong.*, Part 4: 97, 1961.
5. SHETTY, B. V. AND K. SUBRAMANYAM—*Proc. Ind. Sci. Cong.*, Part 3: 299, 1961.
6. MALIK, G. P.—*Sci. and Cult.*, 27: 198, 1961.
7. SHARMA, A. K.—*Genetica*, 27: 323-363, 1955.
8. CLARKE, C. B.—in DC. *Mon. Phan.*, 3: 178, 1881.
9. SHARMA, A. K. AND ARCHANA SHARMA—*Jour. Genet.*, 56: 1-22, 1958.
10. MURTHY, K. L.—*Curr. Sci.*, 3: 258-259, 1934.
11. SIMMONDS, N. W.—*Heredity*, 8: 139, 1954.